USAF Culture and Cohesion: Building an Air and Space Force for the 21st Century

INTRODUCTION

Today's Air Force has a cohesion problem. The Strategic Air Command (SAC) and Tactical Air Command (TAC) have gone away, melding into Air Combat Command (ACC), but you still hear "fighter wonks" and "bomber weenies" deride each other. You hear pilots badmouth navigators (and vice versa), and what is this with a distinctive blue "flight" suit for the "missile pukes?" You don't even want to hear what the non-rated folks have to say about the "leather jacket brigade!" Or what the "near earth air force" has to say about the "pigs in space." And what about the "computer geeks" and those "airhead engineers?" Overstated? Perhaps. But there have been graphic examples of each of these internal United States Air Force (USAF) divisions over recent years. Indeed, the Air Force has a cohesion problem, and it is firmly rooted in Air Force culture, subcultures, and organizational dynamics within the diverse, complex entity that is today's USAF.

The purpose of this paper is to analyze the roots and the current manifestations of that cohesion problem—to define and develop the problem itself—as a basis for some suggestions as to how the USAF can begin to mold itself into a more cohesive force for the 21st century. It starts by examining exactly what organizational culture is, particularly as that broad concept more narrowly applies to the Air Force. The paper then examines several traditional cultural depictions of the USAF, and it expands on those traditional views and its own analysis to outline a

detailed cultural description of the Air Force today. Based on that expanded cultural view, it examines the applicability of cohesion-building activities in several other government agencies in suggesting how to increase the cohesion of the current and future Air Force.

CULTURE

> Every organization has a culture, that is, a persistent, patterned way of thinking about the central tasks of and human relationships within an organization. Culture is to an organization what personality is to an individual. Like human culture generally, it is passed on from one generation to the next. It changes slowly if at all.[1]

This statement captures the key points of organizational culture—a patterned way of thinking, focused on central tasks (operations) and relationships (administration), passed on by generations, slow to change—and each deserves a brief expansion.

Any organization's patterned way of thinking revolves around what is variously called its *essence* or the beliefs of the *corps* around its *core*. The central career professionals, those most closely associated with the organization's core operation around its central tasks, define the mission and decide on the capabilities needed to carry out that mission. Designating the mission and the capabilities also indicates the specific qualifications and focus of the organization's members.[2] The elite group at the center of the organization's mission, the elite profession (or the corps at the core), stakes out the boundaries of the organization (its roles and missions), exercises control over the

operations of the organization (with spillover influence on the policies which direct that operation), controls the personnel system for that core operation and its supporting operations, and establishes a career system to institutionalize that control. Dr. Frederick Mosher maintains that within even the most complex organization, a single professional elite possesses knowledge, skills, and orientations identical to the mission and activity of the organization. This is the corps elite, or the elite profession within the organization, and it defines the essence, sets the culture, and determines the vision which define the organization.[3] Mosher diagrams the modern governmental organization as depicted at Figure 1.

The key relationships within the complex government organization revolve around that operational core. The modern organization is comprised, first, of workers (category 6) who carry out the organization's defined tasks within its operational environment. These are the doers of the organization, but they do not rise to the policymaking levels that define the organization's essence. Next are the administrative professions (category 5) who provide service support for the organization's mission. An example here is finance. Administrative professions are essential to the organization, but will have little role in defining its essence. Then come Mosher's supporting line professions (category 4), who provide direct support to the organization's core mission. For the Air Force, this would include the Reserve and the National Guard, who directly participate in core operations, but who do not define Air Force culture. Category 3, the staff professions such as legal and scientific personnel, are essential parts of the team, but again do not normally set its culture. And category 1 represents the political appointees who directly oversee the military force—the Secretary of the Air Force and the Secretary's staff.

They would seem to be in a position to define the vision and culture of the Air Force, but culture cannot be imposed from outside—it arises from within the core line professions.
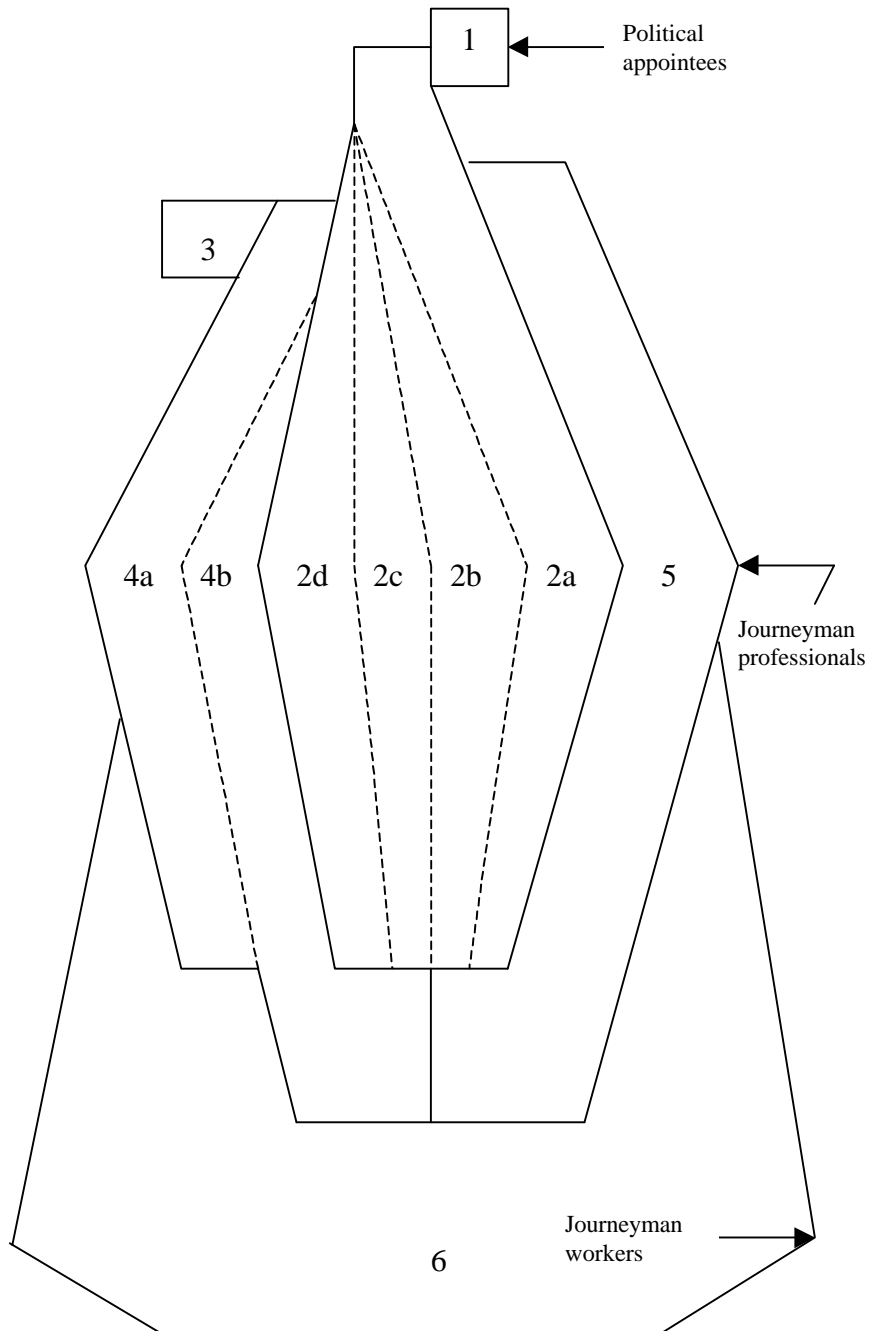
Figure 1: Mosher's Schematic of a Professionalized Government Agency

KEY: 1. Political appointees from outside the agency; 2. The elite profession, 2a. The elite segment of the elite profession; 2b, c, d. Other segments of the elite profession; 3. Staff professions; 4. Line professions; 5. Administrative professions; 6. Workers, including supervisors, paraprofessionals, clerical, manual, and others.

That leaves Mosher's category 2, the elite professions. This is the group which most defines and promulgates Air Force culture. It is composed of the operators who directly undertake the central missions of the USAF—air (and today space) military operations—such as pilots, logisticians, maintainers, and intelligence officers. These elites are at the heart of the organization's task environment, and they provide the majority of the senior leadership that also operates in the administrative/political external environment.[4] But even within category 2, certain professions (2a) have a more significant impact on the organization's culture than do others.

In large organizations or those with complex missions, secondary elites emerge around their particular sub-mission or mission segment. These secondary elites can exist within any segment of the organization, including within the corps at the core of the organization. The organization can exhibit tensions and conflict across these elites as each espouses its own organizational vision based on its particular experience and focus. Thus, a rank ordering often develops among the core elites, with resultant intra-organizational mission competition, making analysis of the relationships among these various elites key to a full understanding of the organization.[5] These subcultures often develop around the many and varied "professions" within today's complex military service.

Professor Samuel Huntington discussed the existence of both "associational" professions (those existing outside of government but with roles inside government organizations such as law or medicine) and "bureaucratic" professions (those developed specifically within the government to fill its unique needs such as foreign service officer or military officer).[6] Mosher uses the terms "general" professions and "public service" professions, and adds "emerging" professions such as

(in the early 1980s) computer scientists which often have a civilian counterpart, but are not yet established enough to be considered universal either within government or across the broader society.[7] Professor Charles Moskos details the significance of these professions by categorizing military members as relatively more or less "institutional" or "occupational." Institutional values and behaviors reflect the "calling" of service, with emphasis on military service, competence, and mission. Occupational values and behaviors revolve around the technical specialty, with emphasis on the job rather than the organization within which it is carried out. Moskos notes that both sets of values and behaviors coexist within organizations and individuals. But he emphasizes that "associational" or "general" professions that have non-military and non-governmental applications are more open to "occupational" associations while "bureaucratic" or "public service" professions that are centered within the military or the government are more prone to "institutional" associations. Herein lies one source of internal division within a complex organization containing both types of professions.[8] But when challenged from outside the organization, these subcultures may come together and present a unified face to external organizational challenges.[9]

So Mosher sees the military service, in broad terms, as consisting of workers (technical specialists in the service technologies and missions), supporting and staff managers (officers in what the Army would call combat support and combat service support specialties), and management professionals (officers within the core or elite profession of the service—the Army's combat arms).[10] This trichotomy is not unlike the more general description of a modern business organization offered by Dr. Edgar Schein, who uses the categories operators (carrying out the tasks of the organization within its task environment), engineers

(lending technical support to the core mission within the task environment while bridging into both the broader community of engineers outside of the organization and the fringes of the administrative, political, and policy environment of the organization), and executives (who determine organizational policy and interact directly with the administrative or political environment of the organization).[11] It is that group of management professionals or executives which are of central interest in examining the organization's culture.

It is also that group which makes up the core elite leadership which is most important to the relative cohesion of the organization. Dr. James Wilson finds that if the culture is shared and endorsed across the various subgroups which comprise the organization, then a sense of *mission* exists, and the organization is relatively cohesive both internally and in its approach to the outside world. Able leaders attempt to shape the culture toward that cohesive sense of shared mission, but this is often a very difficult bridge-building exercise.[12] A RAND study agrees, stating that a "collective, shared sense of a distinct identity and purpose appears to be a hallmark of the most successful institutions." The RAND study calls this the *organizational vision*, and further states that such a shared vision lends the organization relevance, clarity, realism, inspiration, and a positive internal and external public image.[13]

The organizational cultures of the U.S. military services, and of the other organizations within the U.S. national security bureaucracy (Department of State, Central Intelligence Agency, etc.), are particularly strong because these organizations employ a career system based on the "closed career principle." These organizations recruit personnel upon completion of basic education, and these personnel spend their career almost exclusively in that one organization. They are educated, trained,

and advanced by the organization based on its internal rules and priorities, and there is almost no lateral entry into the organization except at the entry level—career personnel are protected from outside competition.[14] The services recruit and indoctrinate new members around their core mission and its requirements, thus ensuring cultural continuity across generations. They provide tailored professional education programs to prepare career officers to move up the chain of responsibility for the core mission, and they promote these career personnel into the decision and policymaking levels within their career elite with only limited external veto and no real external competition. The service culture is institutionalized by the organization and internalized by its members.

Organizational culture has significant impact on organizational behavior. On the positive side of the coin, culture gives the organization its mission identity, sense of commitment, and professional focus. It defines the organization, and it is at the center of shaping the operational focus and capabilities it brings to its combat task environment. But it also takes on an administrative dimension, shaping the responses of the organization to its mission rivals and those with whom it must operate in carrying out its mission. This behavior is not always productive. Even more importantly, organizations fight hardest when they feel that their core mission is being challenged. The organization will favor policies that promote the core mission, it will fight for autonomy in performing that core mission, and it will seek to defeat any challenges to those functions that it associates with its core. It will be largely indifferent to functions it sees as peripheral to its core, even if those functions are part of its assigned purpose. Finally, it will try to push out, or reject accepting, non-core missions as possible detractions from its core focus.[15] All of these effects are possible inside

the organization, between the various subcultures, just as they are evident outside it in terms of service rivalries.

To the extent that these behaviors spur excellence in mission accomplishment through competition, they are seen as positive. However, sometimes they lead to dysfunctional results, and there is no easy or immediate solution. Organizational culture changes slowly and primarily in response to internal pressures to adapt to a changed operational environment, not in response to external direction. Cultural change is referred to in terms of cultural epochs, some as short as five years, but most occurring over a decade, a generation, and some as long as a century.[16]

Dr. Earl Walker argues that true organizational change requires a cultural transformation—not simply accommodation and incremental modification but changed organizational output in terms of structure, professional incentives, and changed professional behaviors. Incremental modifications fail to keep pace with changes in the organization's task environment, leading overseers within the political environment to perceive organizational failure. The organization is thus faced with a choice between reorganizing itself to fit the new reality, assigning itself a future of irrelevant mediocrity, or risking termination or absorption into a "vital" organization, possibly a rival. The reorganization option, implying organizational (cultural) change, consists of several steps: recognition of pressures due to changes in the organization's external environment; perception that existing performance is inadequate; formulation of a new organizational strategy (planned outputs, goals, and objectives) to meet the changed environment; modification of the organization's structure to accommodate new tasks and relationships; transformation of the organization's culture to meet the realigned elite professions and their

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relative priorities; and, finally, changed output in terms of organizational performance and product as a result of the new strategy, structure, and culture.[17]

Alternatively, Dr. Stephen Rosen sees the "problem" of completing change and building cohesion within the system of subcultures which are today's military service—changing organizational culture—as a function of creating shared values and legitimacy leading to a common "theory of victory" (or vision), an alignment of new or changed tasks with "critical" tasks identified and ranked, a realigned distribution of power within the organization reflecting the new hierarchy of missions, and new or changed career paths to grow organizational members into future leadership positions at all levels.[18] So the organization struggles hard to protect its turf, its budget, its mission, and its self-identity as long as it can. Transitions are painful to the organization, and this is a time of transition for the U.S. military. Therefore, we turn to an examination of traditional Air Force service culture as prelude to addressing the changing operational environment and the transitioning Air Force culture.

USAF CULTURE

Traditional Air Force essence evolved around strategic bombing, particularly the aerial delivery of nuclear bombs against the Soviet Union. Internally, the primary contender for influence was the group advocating tactical airpower—from close air support to the Army to the delivery of tactical nuclear weapons on the battlefield. Another challenge to primacy within the service came from advocates of missile-borne nuclear weapons in lieu of the manned bomber. The strategic corps was so powerful as to prevent the emergence of another power

center from the airlift community, even after the success of the Berlin Airlift—airlift remained a secondary mission removed from the core of nuclear bombing.[19]

The challenge of the missile community to bomber pilot domination forced the Air Force to adapt to external demands and incorporate missile technology, even to advocate missile development and procurement. However, the corps never dropped their demand for at least coequal attention and money for bombers, and the expanded nuclear mission—bomber or missile delivered—remained at the core of Air Force culture across much of the Cold War.[20]

Air Force promotion rates to the rank of Colonel from 1954 through 1971 reflect the assertion that senior leaders define organizational culture and that the organization rewards and promotes core elites at a higher rate than peripheral officers. But the Air Force core elite was changing. First, the promotion potential of those officers assigned to the core strategic mission—including both bomber pilots and missileers—declined across this period. From a high in 1954-55 of promotion rates three times as high as those in the rest of the Air Force, Strategic Air Command (SAC) officers steadily declined to promotion rates below the Air Force average by 1966. This trend continued through 1971. Observers also trace the "below the zone," or accelerated, promotion rates for SAC officers from 1962 through 1971. For those officers identified for early, "fast track" promotion to Colonel, SAC was above the Air Force average in 1962 and 1963, falling below the average for all but one of the subsequent years across the study. For flyers within the Air Force, however, including all flyers—strategic, tactical, and transport—promotion rates to Colonel remained above the Air Force average for all but one year across 1956-1971. The core of the Air Force might be turning away from the strategic mission from 1966 on,

but flying airplanes remained the Air Force focus.[21] From the 1960s, the Air Force adapted its culture to accept a primary role for the aerial delivery of tactical nuclear and non-nuclear weapons, but strategic bomber pilots remained at the top of the Air Force until the early 1980s, when for the first time a tactical pilot became Air Force Chief of Staff.

Builder sees this shift from strategic elements at the center of the core of the Air Force to tactical dominance in largely negative terms—the USAF has lost its guiding vision (strategic airpower theory) and thus its cultural cohesion. According to this view, the cohesive core around decisive, strategic airpower through World War II gave way to nuclear deterrence shortly after the founding of the independent Air Force. This wedding of the Air Force to nuclear deterrence gave entry to the missile and space community, which accelerated the shift to a focus on technologies over missions. The lack of a strategic role in Korea and Vietnam gave rise to the tactical subculture as well, splitting the USAF core and leaving only weapon systems as a focal point.[22] Dr. James Mowbray attributes this shift to replacement of aerospace power at the heart of USAF doctrine with less defined "national objectives," thus leading to a devolution to sub-mission identities around these diverse objectives.[23]

By the late 1980s, then, the primary Air Force internal divisions revolved around technologies, with splits between pilots and all others; with missiles beginning to assert a claim on a piece of the core, and between the types of systems the pilots flew—between fighter and bomber pilots, between transport pilots and "combat" fliers, and even between air-to-air and deep interdiction pilots and close air support pilots. The Air Force essence was centering on the technology of the flying machine, even to the extent that it could be described in religious terms.

The Air Force could be said to worship at the altar of
technology. The airplane was the instrument that gave
birth to independent air forces; and the airplane has,
from its inception, been an expression of the miracles
of technology. . . . There is a circle of faith here: If the
Air Force fosters technology, then that inexhaustible
fountain of technology will ensure an open-ended
future for flight (in airplanes and spacecraft); and that,
in turn, will ensure the future of the Air Force.[24]

Builder touched a grain of truth here. For example, cannon and shell,
instruments of war, abound around the periphery of the West Point
plain, but the central area closest to the cadets who will lead the future
Army is reserved for statues of military leaders of note—Washington,
MacArthur, Eisenhower, and even Patton. At the Air Force Academy,
busts of air leaders, from the Wright Brothers through Hap Arnold,
surround the central area, but upon that area one finds static displays of
the F-4 and F-105 from Vietnam and the F-15 and F-16 from Desert
Storm. Technologies of flight take center stage.

Given that "worship" of technology, the Air Force core
measures itself in terms of aerospace performance and technological
quality—the clear emphasis is on quality over quantity, and the self-
identity is with the platforms flown or launched. Given its future
orientation and attachment to technology, the Air Force still remembers
its struggle with the Army for independence, and it is sensitive to
challenges to that independence or to its attachment to the ground
combat mission. It emphasizes the strategic dimensions of aerial
combat over the ground support roles to continue to assert its case for
autonomy as a service.[25] The Air Force is "the keeper and wielder of the

decisive instruments of war—the *technological marvels of flight* that have been adapted to war."[26]

The Air Force was best positioned of all the services for Desert Storm, but not necessarily for the end of the Cold War. The traditional Air Force core mission had been strategic deterrence of the Soviet Union. That mission continued with the end of the Cold War—Russia and three other former republics still had strategic nuclear weapons—but would continue to dwindle as the Russian weapons drew down with time toward START II limits. Foreseeing this loss of mission, the Air Force issued a new vision statement, *Global Reach—Global Power*, promoting conventional long-range power projection and precision bombing against regional threats.[27]

This vision reflected a continuation of changes that had been occurring within the Air Force since Vietnam. Advances in conventional technology, precision, and lethality had accompanied the takeover of Air Force leadership by the "fighter mafia." Tactical pilots had supplanted bomber pilots, and *Global Reach—Global Power* gave voice to their vision of how air power should (would) be employed in the new world order. This was a significant shift in the Air Force elite, but it happened gradually and deliberately, and subsequently somewhat limited its major disruptive effects within the Air Force.[28] Today the leadership transition is complete. As of June 1997, nine of the 11 active Air Force four-star generals were fighter pilots, and the remaining two were bomber pilots.[29] See Figure 2 for details. By September 1997 one of the bomber pilots had retired, and was replaced by yet another fighter pilot. Note that all were pilots.

Figure 2: USAF General Officer Profile

Rank	Number	Fighter Pilot	Bomber Pilot	Airlift/ Tanker Pilot	Non- Rated	Grad Degree	ISS	SSS
O-10	11	9	2	0	0	11	10	11
O-9	36	18	4	3	11	34	29	35
Senior Leadership	47	27 57%	6 13%	3 6%	11 23%	45 96%	39 83%	46 98%
O-8	78	39	6 (1 Nav)	12	20	74	68	78
O-7	122	44 (2 Nav)	11	23 (1 Nav)	41	118	107	118
All Leadership	247	112 45%	24 10%	39 16%	72 29%	237 96%	214 87%	242 98%

Source: http://www.af.mil/news/biographies/ as of 9 June 1997.

Whatever its purpose and genesis, *Global Reach—Global Power* gave voice to exactly the rapid, lethal air power which the Air Force employed in the Gulf War. The precision, decisive air power employed in the Gulf positioned the Air Force out in front of the other services for the force cutback debate following Desert Storm. It was developing a clear vision of its future, and it demonstrated that it was ready to carry out that vision. While the other services struggled to define themselves coming home from the Gulf, the Air Force pushed for its faster, higher, stealthier future.[30] That push emphasized technology and rapid force projection, and it also emphasized expansions in the roles that space and information dominance will play in future conflicts.[31] The Air Force may have seen its core mission reduced, and it may have seen its core elite shift from the bomber mafia to the fighter mafia with an accompanying shift from a strategic to an operational focus, but it maintains its attachment to the future technologies of air

and space combat—the decisive instruments of future war now codified in *Global Engagement*.[32] As this vision matures, and if it can withstand the push toward a narrower, more surface warfare orientation from the Army and Marine Corps revolving around the *Joint Vision 2010* process,[33] the transition to a high-end operational (theater) decisive air and space power vision may become complete, allowing the USAF culture to complete the transition toward its preferred 21st century.[34]

As *Global Engagement* summarizes this transition and the vision that forms its foundation, "*Global Reach—Global Power* prepared the Air Force to deal with the challenges of the transition era following the Cold War. *Global Engagement* . . . charts a course that will take the Service beyond this transitional period and into the future." It continues "Our Vision Statement remains: Air Force people building the world's most respected air and space force . . . global power and reach for America."[35] That vision is based on Air Force people, who must adapt to and embrace the new technologies, mission, organizational concepts, and eventually the new culture that the transition entails. The Air Force must continue to transition toward an Air and Space Force, reinventing itself as a cohesive entity based on its realigned culture.

CULTURAL COHESION

Transitions are painful, with shifting power structures, relationships, tasks, rewards and incentives. The USAF has been undergoing such a transition at least since Vietnam, and it continues through to today. The consequences are profound, leading to the lack of cohesion we see in that Air Force today. Many observers have detailed either the depths or directions of the transitional fractionalization of the USAF. Their observations are summarized here as prelude to a discussion of the

methodology and results of an attempt to confirm and extend those observations—to more fully define the "cohesion problem" the Air Force faces in the late 1990s.

Dr. Rice, former Secretary of the Air Force, noted the overwhelming identification by USAF members with their weapon system over their service. He also noted an emphasis on operational factors leading to an anti-intellectual bent and little resulting attachment to any broader USAF mission or doctrine.[36] Builder agrees. He characterizes the contemporary USAF as lacking an integrating vision, noting fractionalization with the space faction now heading off on its own toward a separate force future. He sees attachment to technologies but without any glue to bind those technologies together around traditional roles and missions of airpower, with the result a dominance of occupationalism over institutional attachments. To Builder, the USAF has no strong, unifying mission or vision, so loyalty has devolved to functions, technologies, and occupations.[37]

As noted earlier, Margiotta makes similar observations. He states that in his experience he served in or with 30-40 different "air forces," with the only common elements between them a single colored uniform and a universal belief that each member and faction was serving the cause of the national defense. He observed that combat functions, centered on the flightline and silo and on the shared dangers and hardships of USAF operations, exhibited more institutional attachments. Support functions, removed from the flightline and silo, exhibited a more bureaucratic orientation and closer integration with civilian specialists, tending more toward occupational identifications. The highest technology areas of research and development, according to Margiotta, are indistinguishable from civilian R&D institutions. He sees technology as the organizational essence of the Air Force, with this

trend reinforced through the partnership effort with civilian aerospace industry needed to bring new weapon systems on line. The USAF fighting force is small, well educated, highly specialized around discrete technologies, and functionally organized around that functional specialization. In such an atmosphere, technology management is more prized than combat leadership.[38]

Moskos notes that institutional and occupational orientations are not necessarily a zero-sum game, but coexist along a continuum, varying within individuals and across services, branches, ranks, and functional specialties.[39] And Dr. Frank Wood summarizes two decades of attempts to measure institutional and occupational attitudes within the changing USAF across the 1970s and 1980s. He observes that the high technology emphasis of the USAF makes it most susceptible to specialization and occupational attachments, particularly as those USAF specialties have civilian air and space equivalents. As the USAF task environment reoriented from strategic combat to deterrence and pursuit of political objectives, the service fragmented around its sub-specialties. The expanded role of, and exposure to, civilian contractors deepened this fragmentation toward occupationalism. He also notes that economic realities, with their increasing emphasis on a management orientation (versus a combat or results orientation) and economic analysis further deepened the occupational linkages.[40]

Wood reports that in the 1980s 70 percent of USAF officers surveyed saw flying assignments as of decreasing prestige and managerial assignments of increasing prestige. This trend was most pronounced among majors and lieutenant colonels—middle ranking career officers. In the same time period, junior officers were also found to value the technical expertise and managerial responsibilities of support positions over flying assignments. And 63 percent of senior

officers felt that combat experience should not be a prerequisite for promotion to general—to the highest positions of USAF leadership. The Air Force was clearly becoming more occupational in its orientations. Further evidence was that 40-50 percent of junior officer flyers identified themselves as pilots first—they just happened to be practicing that occupation for the USAF. Perhaps surprisingly, since the pilot force is at the heart of USAF combat operations—supposedly the more institutional part of a modern service—the pilot force was found to be the more occupational of USAF specialties, with support officers identifying more closely with institutional management.[41] Based on all of these observations and analyses, this study sought to employ some of these same concepts to capture a "snapshot" of the USAF in the late 1990s.

The USAF in the Late 1990s

This study maps selected characteristics of the USAF corps elite, the organizational culture setters of the service—its general officers—and of the USAF officer corps as a service highly susceptible to occupational attachments. Then it employs a survey instrument to further delineate selected elements of cohesion and fragmentation across specialties, ranks, and leadership generations. The overall result is a snapshot of an organization defined by its subcultures and fracture lines more than, or at least as much as, its common base or heart.

Again, from studies of the USAF from the 1970s and into the 1980s, we expect the Air Force to represent a spectrum of attachments to both the institution and to its many occupations, but with a fairly strong lean toward the occupations in many cases. The Air Force should be a confederation of technical specialties, with this fractionalization a function of the technical nature of the service, its resulting close and continuous contact with civilian contractors and specialists from

equivalent occupations, and of its bureaucratic, management practices dating from the 1970s.[42] Distinctive uniforms, flight jackets, badges, and pay bonuses have helped retain critically skilled officers, but they have also helped to deepen individual identification with subcultures and splits between those various factions at the higher, service level. The occupational orientation resulting from technology and skill orientation is deepened by the pursuit of skill-related higher education that is so characteristic of the Air Force officer corps.[43] This set of occupational factors sets the Air Force apart from the ground combat services, which have been hypothesized to be, and demonstrated to be, more institutional in their orientation. The Marine Corps has been found to be the most institutional of the services, for example.[44] The lack of direct civilian equivalents for many of their core skills is a factor here.

Within the relatively more occupational USAF into the 1980s, senior officers were found to be more institutional in their orientations and junior officers more occupational.[45] The closed career institutional selection and professional military education processes can help account for this finding. Further, among the mid-career and senior Air Force officers, aircraft and missile operators were found to be the most institutional with support officer specialties found to be more occupational and research and development specialties the most occupational in their orientations. Among junior officers, however, the operators—particularly the pilots—were found to be more occupational in their orientations than were support officers.[46] By the 1980s, the Air Force was a service of fragmented specialists, well educated in and oriented toward their occupational skills, with more institutional attachments found primarily as a function of advancing rank and "professional" exposure within the officer corps. But do these trends

hold true into the 1990s and approaching the 21st century? More current data is needed to begin to address possible approaches to increasing USAF cohesion today.

An initial profile of USAF officers points to a continuation and perhaps even a deepening of some of the factors seen as contributing to USAF occupational orientation and fragmentation. A primary indicator of continuing USAF attachment to technology and to a continuing occupational orientation is education. The data reported at Figure 2 point out that 96 percent of all USAF generals have earned at least one graduate degree. The data at Figure 3 remind us that the Air Force is by far the most educated of the services, with 60 percent of all USAF members enrolled in some post-secondary education in 1996 and 2861 USAF members earning graduate degrees that year. The former figure represents almost 60 percent of the total Air Force members and almost 40 percent of the total enrollees from the military services (the USAF is only about 20 percent of the total military strength). The latter figure represents over 70 percent of all graduate degrees awarded to members of the U.S. military. Figure 4 data reinforce this profile of a highly educated specialist service. Air Force line officers, over half of whom hold graduate degrees, are clearly a well-educated group. And again by comparison, the Navy was reported earlier in 1997 to have only 77 serving line officers with doctoral degrees—the USAF has almost 900.[47]

Figure 3: Military Higher Education Profile FY 1996

Post Secondary	Army	Navy	Marine Corps	Air Force	Total
Personnel	495,000	424,500	174,000	388,200	1,481,700
Number Enrolled	199,882	140,704	48,272	232,090	620,948
Percentage Service Enrolled	40%	33%	28%	60%	42%

| Grad Degrees | 322 | 647 | 123 | 2861 | 3953 |

Sources: *Air Force Times*, 11 August 1997; and Secretary of Defense, *Annual Report to the President and the Congress*, March 1997.

Figure 4: USAF Line Officer Education Profile FY 1996

Highest Degree Held	Number	Percentage
Below Baccalaureate	137	0.22%
Baccalaureate	30,423	48.85%
Masters	30,824	49.50%
Doctorate/Professional	891	1.43%

Source: *Air Force Magazine*, May 1996.

Air University conducted two earlier surveys of almost 2000 of its staff, faculty, and students in 1996 to support the development of a curriculum for the proposed Air and Space Basic Course for all newly commissioned Air Force officers. These surveys indicated that the USAF officer corps recognizes that its members display careerist attitudes and identify primarily with their technical specialties.[48] In summarizing the results of the Airman's Basic Course Curriculum Structure Survey and the Shared Institutional Values Survey, one analyst states "The responses indicate that officers value unit cohesion, identify with technical specialties and do not persuasively articulate airpower doctrine."[49] This would seem to indicate that in the absence of a shared vision or sense of mission, Air Force officers turn to their occupations and immediate unit built around that occupation for their primary identification. This is symptomatic of a fractionated confederation of subcultures rather than a cohesive military service.

Beyond these "snapshot" descriptive data and survey results, this study also surveyed USAF officers to find more detailed answers to

questions about what the Air Force looks like today—how it is oriented, where its main fracture lines lie, and the intensity of its faultlines across specialties and ranks. The survey instrument was designed primarily from a series of institutional/occupational (I/O) questions used by several researchers across the past two decades.[50] The surveys were designed to be broken out by rank and career specialization in order to disaggregate the USAF into major subcultures around the I/O dimension. Eleven questions were "standard" I/O questions borrowed from established questionnaires. Ten other questions were adapted I/O questions designed to focus on Air Force technology, missions, and priorities. The other four questions were added to attempt to capture attitudes on Air Force issues of the late 1990s, specifically space, cyberspace, and technology. The survey instrument is at Appendix 1.

The survey was submitted for USAF approval, but was administered only to the students entering PME courses at Maxwell AFB, AL in the late summer of 1997. The three primary schools surveyed, the Squadron Officer School (SOS), the Air Command and Staff College (ACSC), and the Air War College (AWC), form a representative cross section of all Air Force specialties. They capture junior officers (SOS students are Lieutenants and Captains generally with less than seven years of service), mid-career officers (ACSC students are Majors with ten to twelve years of service), and senior officers (AWC students are Lieutenant Colonels and Colonels with over 15 years of service who are being prepared for senior USAF leadership positions).

The survey was administered at the very beginning of the educational programs when the students had just arrived from USAF field assignments and before any leveling of attitudes could take place as a result of cross-specialty contacts within these programs. The survey

was targeted at active-duty, line officers—members of the corps elite segments and primary supporting segments of the service. These are the culture-setting segments of the Air Force—its core culture and primary subcultures are best represented here. Further, SOS is designed to capture a broad cross-section of the USAF junior officers—it is not highly selective in attendance policies. But ACSC and the AWC are very selective, with only the "top" selectees for mid-career and senior ranks offered the opportunity to attend. This actually produces a sample which best represents the culture and its adherents according to Mosher's closed career model. A review of Figure 2 reminds us that almost 90 percent of current USAF generals completed intermediate service school (ACSC or another service's equivalent)—with a few unable to complete due to mid-career operational requirements—and 98 percent completed senior service school (AWC or an equivalent sister service or national program). Other studies have indicated that completion of professional education programs is highly correlated with selection for Air Force command assignments (97 percent of USAF wing commanders in December 1990 were intermediate service school graduates)[51] and for senior-level promotion (from 1976-1983, 93 percent of USAF officers selected for promotion to Colonel were senior service school graduates).[52] And the service professional education programs themselves should provide a deepening of attachment to service values and culture. The survey for this study was administered to Air Force professional education program students as a take-home project, with target students and returns as reported at Figures 5-7.

Figure 5 indicates that of the 1030 valid responses, 9 percent were from Lieutenant Colonels (O-5s) at the Air War College, 35 percent were from Majors (O-4s) at ACSC, and 56 percent were from Captains (O-3s) at SOS. The few Captains in the ACSC class were

coded as Majors here to differentiate the senior Captains, all of whom are already on the promotion list to Major if they are attending ACSC, from the more junior Captains in the SOS class. The respondents included 38 percent rated officers (pilots and navigators) and 62 percent nonrated (all other officers), with 48 percent from operational specialties (pilots, navigators, and space and missile officers), 35 percent from support specialties (intelligence, weather, logistics, security, base engineering, computers and communications, and services career fields), and 16 percent from scientific and engineering specialties (scientist, research engineer, and acquisitions career fields)—all based on primary Air Force Specialty Codes (AFSCs). Intelligence officers were considered in the support officer category for this analysis. While intelligence is now being classified as an operational career field by the Air Force, that change is considered too recent to have had marked cultural effects among intelligence officers.

Figure 5: Survey Response Demographics, Aug 1997

School	Rank	Number	Rated	Nonrated	Ops	Ops Spt	Sci/Engr
AWC	O-5	95	36	59	41	34	20
ACSC	O-4	361	131	230	161	137	63
SOS	O-3	574	221	353	297	194	83
Total		1030	388	642	499	365	166

Figure 6: Survey Response, Additional Demographics, Aug 1997

School	OTS	ROTC	USAFA	Other	Male	Female	Joint	No Joint
AWC	21	50	24	0	86	9	45	50
ACSC	125	155	78	3	322	39	46	315
SOS	85	334	138	17	507	67	0	574

Total	231	539	240	20	915	115	94	936

Figure 6 breaks out the respondents by source of commission, with an overall 22 percent having entered the USAF through Officer Training School (OTS), 52 percent via Reserve Officer Training Corps (ROTC) programs, 23 percent through the Air Force Academy (USAFA), and 2 percent via other commissioning programs. Further, 89 percent were male and 11 percent female, and 9 percent had served a joint-assignment tour while 91 percent had served only USAF tours. Several Captains at SOS indicated in their survey responses that they had served a joint tour, often with explanatory notes indicating a temporary duty assignment with a joint task force, or completion of flight training at Pensacola or Fort Rucker, or even a joint-spouse assignment, so all SOS Captains were coded as having no joint tour. The purpose of examining joint-assignment effects here is to determine if long-term exposure to the other, more institutional and less technologically oriented services moderates USAF culture, and neither short-term exposure nor exposure prior to USAF culturization would necessarily lead to those effects. Finally, Figure 7 indicates that 6 percent of the respondents had already completed AWC in some form, 12 percent had completed ACSC, 38 percent had completed SOS, 2 percent had completed a non-USAF PME program, and 43 percent had completed no PME.

Figure 7: Survey Response, PME Completed, Aug 97

AWC	ACSC	SOS	Joint/Other	None
61	126	389	15	439

Institutional/Occupational Orientation. Figures 8-17 present the results of analyses on the institutional/occupational (I/O) orientations of officers in the late 20th century USAF. Expectations

from earlier studies are that the senior officers will be relatively more institutional in their orientations than are junior officers, that operators will be relatively more institutional than are the support specialties, and that among junior officers the nonrated group will be relatively more institutional than are rated officers.

Figure 8 indicates that the first of those expectations is also true in 1997. For the group of questions reported at the top of the chart, a lower mean indicates a more institutional orientation. Noteworthy here is the stepwise progression of the pool average of responses to all questions in the group, with Lieutenant Colonels at 1.99, Majors at 2.02, and Captains at 2.37. Analysis of variance (ANOVA) for these survey responses indicates whether these differences, while apparent, are statistically significant—whether these in fact are different responses or whether they only appear to be different as a result of sampling error. For seven of the nine questions in the first group the test indicates highly significant statistical differences, with an eighth indicating less striking but still significant differences. Further, the pooled response to all nine questions indicates highly significant statistical differences. So officer attitudes become more institutionally oriented with advancement in rank, and with both self-selection and USAF selection into the career elite.

Figure 8: I/O Orientation by Rank

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Significance
Q2	2.13	1.28	2.07	1.26	2.03	1.25	0.300	0.741
Q5	2.84	1.15	2.69	1.07	3.25	1.20	27.920	0.000*
Q8	2.37	1.19	2.34	1.08	2.71	1.14	13.168	0.000*
Q12	1.87	1.00	1.88	0.91	2.12	1.09	7.343	0.001*
Q15	1.84	0.97	2.01	0.87	2.53	1.15	37.112	0.000*
Q17	1.78	0.96	1.89	0.92	2.33	1.15	25.384	0.000*
Q20	1.80	0.92	1.99	0.92	2.29	1.03	16.660	0.000*

Q24	1.47	0.91	1.60	0.85	2.11	1.17	33.335	0.000*
Q25	1.80	0.98	1.74	0.96	1.97	1.10	5.893	0.003**
Pool	1.99		2.02		2.37		56.287	0.000*
Q3	3.33	1.13	3.18	1.10	3.10	1.17	1.843	0.159
Q6	3.19	1.14	3.09	1.19	3.30	1.07	3.840	0.022
Pool	3.26		3.14		3.20		1.000	0.468

* Significant at 0.001. ** Significant at 0.005

The data for responses to questions three and six also indicate that Lieutenant Colonels are the most institutionally oriented, as higher means here indicate a more institutional orientation. However, the Captains indicate relatively more institutional orientation than do the Majors, and neither the individual questions nor the pool indicate significant differences between ranks on these questions. Overall, then, higher rank correlates with a more institutional orientation in today's USAF.

Contrary to earlier studies, Figure 9 indicates that both support officers and scientific/engineering officers are more institutional in their orientations than are operational officers (pilots, navigators, and space and missile officers), with support officers slightly more institutional than the scientific/engineering officers. As with rank, seven of the I/O questions and the first pool of nine questions indicate statistically highly significant differences between specializations on I/O orientation. This finding raises concern. Theoretically, the higher technology support functions—those with direct civilian counterparts—should be more occupational in orientation. In today's Air Force, it is the core operators who exhibit relatively more occupational attachments.

Figure 10 shows that while nonrated junior officers were seen as more institutional than were rated junior officers in earlier studies, today nonrated officers indicate a more institutional orientation than do rated officers across all ranks surveyed. Further, eight of the individual questions and the first pooled responses indicate differences that are

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highly statistically significant between these two groups across the ranks. In the 1997 USAF, nonrated officers are clearly more institutionally oriented than are rated officers.

Figure 9: I/O Orientation by Specialization

	Operations		Support		Science		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q2	1.90	1.23	2.35	1.19	1.80	1.15	14.213	0.000*
Q5	3.37	1.17	2.68	1.10	2.69	1.10	13.665	0.000*
Q8	2.68	1.19	2.35	1.07	2.58	1.07	3.054	0.000*
Q12	2.06	1.04	1.95	1.02	1.99	1.01	1.195	0.281
Q15	2.51	1.15	2.01	0.91	2.22	1.05	4.683	0.000*
Q17	2.28	1.12	1.97	1.01	2.01	1.04	2.953	0.000*
Q20	2.24	1.01	1.97	0.94	2.19	1.06	3.867	0.000*
Q24	2.02	1.13	1.70	0.99	1.80	1.07	2.929	0.001*
Q25	1.86	1.03	1.83	1.05	2.01	1.09	0.888	0.559
Pool	2.33		2.09		2.15		5.139	0.000*
Q3	3.05	1.16	3.29	1.10	3.13	1.15	1.906	0.030
Q6	3.24	1.08	3.23	1.16	3.11	1.13	1.491	0.121
Pool	3.15		3.27		3.12		1.780	0.047

  * Significant at 0.001.

Figure 10: I/O Orientation by Rating

	Rated		Nonrated		ANOVA	
	Mean	SD	Mean	SD	F Score	Sig
Q2	1.73	1.17	2.23	1.22	41.885	0.000*
Q5	3.54	1.13	2.70	1.10	137.705	0.000*
Q8	2.74	1.19	2.43	1.09	18.454	0.000*
Q12	2.08	1.06	1.97	1.01	2.970	0.085
Q15	2.53	1.17	2.14	1.00	31.422	0.000*
Q17	2.32	1.14	2.01	1.03	20.640	0.000*
Q20	2.31	1.01	2.04	0.98	17.639	0.000*
Q24	2.08	1.14	1.74	1.02	24.663	0.000*

	Mean	SD	Mean	SD	F Score	Sig
Q25	1.89	1.05	1.86	1.05	0.183	0.669
Pool	2.36		2.13		42.282	0.000*
Q3	2.98	1.18	3.25	1.11	14.369	0.000*
Q6	3.21	1.09	3.22	1.14	0.010	0.920
Pool	3.10		3.24		6.037	0.140

* Significant at 0.001.

This analysis also addresses I/O orientation by rank within career specialty (Figure 11 Operations, Figure 12 Support, and Figure 13

Figure 11: I/O Orientation by Specialization and Rank (Ops)

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q2	2.02	1.21	1.82	1.13	2.41	1.04	0.638	0.529
Q5	3.17	1.02	3.01	1.06	3.59	1.19	14.401	0.000*
Q8	2.66	1.11	2.39	1.13	2.83	1.20	7.354	0.001*
Q12	2.05	1.02	1.81	0.79	2.20	1.13	7.512	0.001*
Q15	1.88	0.95	2.17	0.93	2.78	1.21	23.311	0.000*
Q17	1.88	0.98	1.91	0.92	2.53	1.17	20.127	0.000*
Q20	1.90	0.97	2.02	0.88	2.41	1.04	10.659	0.000*
Q24	1.51	0.87	1.70	0.86	2.26	1.22	10.659	0.000*
Q25	1.63	0.83	1.65	0.87	2.01	1.11	7.449	0.001*
Pool	2.08		2.06		2.51		43.570	0.000*
Q3	3.46	1.07	3.09	1.15	2.97	1.18	3.342	0.036
Q6	3.44	1.03	3.17	1.18	3.26	1.03	1.090	0.337
Pool	3.45		3.13		3.12		2.604	0.075

* Significant at 0.001.

Figure 12: I/O Orientation by Specialization and Rank (Support)

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q2	2.56	1.35	2.40	1.15	2.28	1.19	0.945	0.389
Q5	2.50	1.26	2.38	0.99	2.93	1.09	11.343	0.000*
Q8	1.91	1.29	2.27	1.00	2.48	1.05	4.888	0.008
Q12	1.79	1.09	1.87	0.91	2.04	1.07	1.535	0.217
Q15	1.53	0.83	1.83	0.75	2.12	0.97	12.868	0.000*
Q17	1.56	0.89	1.85	0.87	2.13	1.09	6.584	0.002**
Q20	1.62	0.95	1.85	0.78	2.12	1.01	6.338	0.002**
Q24	1.29	0.84	1.48	0.81	1.92	1.07	11.545	0.000*
Q25	1.76	1.07	1.77	1.03	1.88	1.07	0.491	0.612

	O-5		O-4		O-3		ANOVA	
Pool	1.84		1.97		2.22		14.810	0.000*
Q3	3.32	1.27	3.26	1.01	3.31	1.13	0.129	0.879
Q6	3.03	1.34	3.11	1.16	3.36	1.13	2.387	0.093
Pool	3.18		3.19		3.34		1.299	0.274

* Significant at 0.001. ** Significant at 0.005.

Scientific/Engineering). In all three groups, senior officers were more institutional in their orientations, with statistically highly significant differences indicated for eight questions and the first pool for operations and for three questions and the first pool for support. There were also two questions for which the support officers indicated less significant but real differences. Of note, there were no statistical differences indicated across the ranks of scientific and engineering officers—these officers are indistinguishable on their I/O orientations between ranks.

Figure 14 indicates that there are no statistically significant differences in I/O orientation among the subject officers based on

Figure 13: I/O Orientation by Specialization and Rank (Science)

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q2	1.60	1.10	2.02	1.62	1.81	1.16	0.382	0.683
Q5	2.75	1.07	2.54	1.09	2.80	1.12	0.988	0.374
Q8	2.55	0.94	2.35	1.11	2.77	1.04	2.868	0.060
Q12	1.65	0.75	2.05	1.16	2.02	0.94	1.290	0.278
Q15	2.30	1.08	1.98	0.87	2.39	1.15	2.722	0.069
Q17	1.95	1.00	1.92	1.02	2.10	1.08	0.544	0.581
Q20	1.90	0.72	2.21	1.22	2.25	1.00	0.899	0.409
Q24	1.70	1.08	1.59	0.87	1.99	1.18	2.643	0.074
Q25	2.20	1.06	1.87	1.02	2.06	1.14	0.892	0.412
Pool	2.07		2.06		2.24		2.132	0.122
Q3	3.05	1.00	3.27	1.15	3.05	1.19	0.718	0.489
Q6	2.95	0.94	2.87	1.26	3.33	1.04	3.153	0.045
Pool	3.00		3.07		3.19		0.495	0.611

Figure 14: I/O Orientation by Commissioning Source

	OTS		ROTC		USAFA		Other		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q2	2.27	1.24	2.06	1.22	1.80	1.26	2.65	1.60	6.126	0.000*
Q5	2.83	1.11	3.05	1.20	3.13	1.18	2.90	1.25	2.491	0.042
Q8	2.27	1.05	2.67	1.15	2.52	1.13	2.50	1.22	5.527	0.000*
Q12	2.03	0.98	2.01	1.06	1.95	0.92	2.55	1.36	1.878	1.112
Q15	2.14	0.96	2.35	1.10	2.30	1.14	2.10	1.17	2.208	0.666
Q17	2.10	1.03	2.13	1.12	2.14	1.04	2.30	1.26	0.419	0.795
Q20	2.00	0.86	2.13	1.02	2.25	1.02	2.60	1.39	2.880	0.022
Q24	1.88	1.11	1.83	1.05	1.93	1.11	2.15	1.18	1.076	0.367
Q25	1.93	1.03	1.82	1.01	1.90	1.11	2.30	1.34	1.658	0.158
Pool	2.16		2.23		2.21		2.45		1.952	0.119
Q3	3.27	1.17	3.11	1.10	3.10	1.22	3.35	1.14	1.908	0.107
Q6	3.26	1.12	3.23	1.13	3.14	1.12	3.40	0.75	0.990	0.412
Pool	3.27		3.17		3.12		3.38		1.338	0.261

Significant at 0.001.

commissioning source. The officers only differ on two questions based on source of commission. While source of commission is often seen as a primary shaping influence on culture and attitudes, any differential effects may not survive the common influences of service in the USAF.

Figure 15, on the other hand, indicates some significant I/O orientation differences based on level of PME completed. Basically, the higher the level of PME, the more institutional the orientation based on statistically highly significant differences on six of nine questions plus the pool of the questions in group one. As with the correlation of institutional orientation and higher rank, the officers at the higher levels

of PME completion have committed to a career in the Air Force, "buying in" to that institution. They have also been exposed to more institutional education, which has the dual effects of promulgating institutional values and exposing the student to a range of career specialization concerns and views. The PME process is an institution-building process.

Figure 15: I/O Orientation by PME Completed

	AWC		ACSC		SOS		Other		None		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q2	2.15	1.38	2.13	1.17	2.02	1.25	2.27	1.22	2.05	1.27	0.391	0.815
Q5	2.74	1.20	2.71	1.06	2.87	1.17	3.60	0.99	3.26	1.18	10.435	0.000*
Q8	2.34	1.25	2.42	1.07	2.40	1.13	2.60	1.30	2.74	1.12	5.748	0.000*
Q12	1.98	1.10	1.78	0.78	1.98	0.96	1.87	0.92	2.12	1.12	2.979	0.018
Q15	1.87	1.02	1.99	0.95	2.20	0.96	2.20	1.15	2.51	1.17	10.500	0.000*
Q17	1.70	0.94	1.87	0.92	2.00	1.01	2.20	1.08	2.37	1.15	11.599	0.000*
Q20	1.72	1.00	1.95	0.95	2.10	0.96	2.13	0.74	2.28	1.03	6.352	0.000*
Q24	1.52	0.99	1.50	0.78	1.81	1.02	1.60	0.63	2.09	1.18	10.557	0.000*
Q25	1.84	1.11	1.77	0.92	1.79	0.96	1.87	1.06	1.99	1.13	2.276	0.059
Pool	1.99		2.01		2.13		2.26		2.38		19.365	0.000*
Q3	3.34	1.12	3.31	1.10	3.16	1.12	3.33	1.29	3.06	1.17	1.780	0.131
Q6	3.08	1.23	3.25	1.06	3.14	1.15	3.80	0.94	3.28	1.09	2.074	0.082
Pool	3.22		3.28		3.15		3.57		3.17		1.241	0.292

  * Significant at 0.001.

The results of the I/O orientation comparison by gender are shown in Figure 16. Noteworthy here is that there are no significant differences between male and female officers on this dimension of their service. Only one question shows any real difference, and it is not highly significant. Self-selecting female and male USAF officers are oriented to the same level of institutional identification according to the responses to this survey.

Figure 16: I/O Orientation by Gender

	Male		Female		ANOVA	
	Mean	SD	Mean	SD	F Score	Sig
Q2	2.02	1.26	2.31	1.15	5.492	0.019
Q5	3.05	1.18	2.72	1.12	8.112	0.004**
Q8	2.57	1.14	2.35	1.12	3.932	0.048
Q12	1.99	1.03	2.20	0.98	4.374	0.037
Q15	2.28	1.09	2.32	1.00	0.138	0.710
Q17	2.12	1.09	2.15	1.04	0.047	0.828
Q20	2.15	1.01	2.06	0.95	0.807	0.369
Q24	1.89	1.09	1.75	1.03	16.770	0.196
Q25	1.87	1.05	1.88	1.04	0.002	0.961
Pool	2.22		2.19		0.175	0.675
Q3	3.14	1.15	3.26	1.10	1.227	0.268
Q6	3.23	1.13	3.17	1.08	0.292	0.589
Pool	3.18		3.22		0.134	0.714

   ** Significant at 0.005.

Figure 17: I/O Orientation by Joint Experience

	Joint		No Joint		ANOVA	
	Mean	SD	Mean	SD	F Score	Sig
Q2	2.11	1.11	2.05	1.27	0.344	0.558
Q5	2.57	1.05	3.06	1.18	15.394	0.000*
Q8	2.28	1.15	2.57	1.13	4.934	0.027
Q12	1.85	0.93	2.03	1.03	2.536	0.112
Q15	1.84	0.89	2.33	1.09	17.037	0.000*
Q17	1.72	0.73	2.17	1.10	11.671	0.001*
Q20	1.77	0.90	2.18	1.00	12.240	0.000*
Q24	1.54	0.87	1.90	1.09	7.832	0.005**
Q25	1.72	0.93	1.89	1.06	1.569	0.211
Pool	1.93		2.24		25.766	0.000*
Q3	3.29	1.19	3.14	1.14	1.500	0.221

Q6	3.11	1.25	3.23	1.11	0.846	0.358
Pool	3.20		3.19		0.036	0.849

* Significant at 0.001. ** Significant at 0.005.

Finally, Figure 17 indicates that there is some differentiation in I/O orientation based on completion of a joint assignment. Those who have been exposed to the other services and their more institutional basis are indicated as being themselves more institutional in their orientation on five of nine questions plus the pool of those nine questions. These differences are statistically highly significant for all but one of the questions. While these joint-experienced officers are also more senior and have completed some higher levels of PME (joint billets normally are reserved for Majors with intermediate service school a prerequisite for assignment), joint experience indicates a more institutional orientation within the USAF.

In summary, for institutional versus occupational orientation, the USAF is seen as differentiated on the basis of rank, (the more senior, the more institutional), rating (with nonrated more institutional), specialization (with operators the least institutional, and with a more institutional orientation associated with increased rank among operators, support officers, and scientific/engineering officers), PME completion (higher PME, more institutional), and joint experience (joint tour, more institutional). No differences in I/O orientation were found based on either source of commission or gender. Again, the relatively more occupational orientation of the rated officers and operators—the USAF core elite segments—raises concerns for building institutional cohesion.

But at least as significant as the I/O orientation differences reported above, the survey indicates that on all I/O responses other than one, the mean response was on the institutional side of the mid-range for that question. In other words, while some USAF officers are more institutional than others, none are fully occupational in their orientation.

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The differences among these two orientations are relative, and the USAF line officer corps remains a relatively institutional body. Further, the standard deviations are not enormous for any of these questions, indicating that while USAF officers have differences, they are all in the same general range in their I/O orientations. Thus, while other studies have chosen to label differences among officers as indicating that one group is more or less occupational than another, this study reports relative degrees of institutional orientation. Finally, question five, the one question for which means did fall over the midpoint and into the occupational side of the spectrum, asked whether the USAF required participation in too many activities unrelated to the officer's job. USAF leadership should note that officers feel that they are being tasked with unnecessary duties, and this perception is strong enough to stand out as the singular "irritant" noted in this survey.

   Mission/Priority/Allegiance. Figure 18 presents the relative rankings about the officer's perception of USAF mission, priorities, and allegiances. In each category, three questions were asked asserting "The mission of the Air Force is . . . ," or "The number one Air Force priority should be . . . ," or "Within the Air Force, I owe most allegiance to . . ." For the mission questions, the choices were designed to represent the operational mission (question 1), technology (question 4), and the "team" aspect of joint service (question 7). For priorities, the choices were people (question 11), technology (question 13), and operational mission (question 16). For allegiance, the choices were career field (question 19), operational mission (question 21), and personal concerns (question 23).

Figure 18: USAF Mission, Priority, and Allegiance Rankings

Mission	Priority	Allegiance
1* Operational Mission	1* Operations First	1 Operations

| 2* Joint Team Mission | 2* People First | 2 Career Field |
| 3 Technology Mission | 3 Technology First | 3 Personal Concerns |

For USAF mission, the relative ranking of the choices was operational mission first, team support second, and technology third for all categories surveyed except for the Lieutenant Colonel scientific and engineering officers, who ranked team support first, operational mission second, and technology third. Similarly, on the relative rankings for allegiance, all categories of officers surveyed ranked operational mission first, career field second, and personal concerns third. For priorities, most groups of officers ranked operational mission first, people second, and technology third. However, people were ranked first and operational mission second by the following groups: scientific and engineering officers; Lieutenant Colonels within every one of the three specialization categories (operations, support, and scientific/engineering); officers who had completed senior, intermediate, or other service PME programs; women; and officers who had served a joint tour. The operational mission/people differentiation was close for most groups, but these two clearly were seen as more important priorities than technology. For a service that "worships" technology (by comparison with the other services), technology is not seen as the priority or as the central mission by USAF officers. Finally, the group that entered the Air Force via "other" commissioning sources ranked both technology and operational mission as their highest priority, with people a very close second.

USAF officers in 1997 generally put their operational mission first in their relative concerns—well ahead of technology, for example. Further, little differentiation is seen within the support officers, the scientific and engineering officers, across the various sources of commission, or between men and women on these questions—these

groups are relatively homogeneous on their relative rankings for mission, priority, and allegiance. Larger and significant variations are seen across ranks, ratings, PME completion levels, and joint-experience categories here.

        Technology/Space. Figures 19-28 present the data from the final focus of the survey, USAF officer attitudes about technology and space. Questions 10, 18, and 22 sought to elicit responses about how important technology and technological expertise are today and into the future as opposed to more traditional operational skills and resources. Higher scores here indicate stronger roles for technology. Questions 9 and 14 sought responses on the role that space/cyberspace will play into the future. Higher scores here indicate a more significant role for space. These questions were also grouped into a technology pool and a space pool for analysis. Particular note should be made of question 9, which asked for a response to the statement "The Air Force should be renamed the Air and Space Force."

Figure 19: Technology/Space by Rank

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.67	1.17	2.38	1.14	2.16	1.12	10.186	0.000*
Q18	2.46	1.04	2.37	0.95	2.42	1.02	0.536	0.585
Q22	2.24	0.96	2.14	0.84	2.46	0.99	13.197	0.000*
Pool	2.46		2.30		2.35		1.300	0.090
Q9	2.56	1.54	2.36	1.36	2.08	1.36	7.920	0.000*
Q14	3.37	1.14	3.24	1.14	2.82	1.14	21.099	0.000*
Pool	2.97		2.80		2.45		20.139	0.000*

  *   Significant at 0.001.

        Figure 19 demonstrates that while there are some significant differences between ranks on their attitudes toward the place of

technology within the USAF, and that the Lieutenant Colonels had the highest regard for the role that technology will play, these differences overall were not significant. For space, however, there were statistically highly significant differences between the ranks across both questions and the pool. Here the higher the rank, the higher the regard for the place of space within the USAF. Senior officers have different and higher expectations for the roles played by technology and space within the institution.

Figure 20 indicates that there are even greater differences on attitudes toward technology and space across USAF specialties. Operators have a high regard for technology, but are less appreciative of a significant role for space. Conversely, scientific and engineering officers are less enamored of technology, but have the highest regard for space. Support officers are the least inclined toward technological roles and are in the middle on space. Statistically highly significant differences exist between these specialty groups on all but one question and both pools. The USAF is divided among specialties on the importance of technology and space.

Figure 20: Technology/Space by Specialization

	Operations		Support		Science		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.22	1.12	2.28	1.14	2.52	1.19	1.557	0.099
Q18	2.19	0.96	2.55	1.01	2.73	0.96	6.708	0.000*
Q22	2.25	0.89	2.29	0.97	2.63	1.04	2.807	0.001*
Pool	2.33		2.09		2.15		5.397	0.000*
Q9	2.08	1.31	2.22	1.40	2.64	1.50	8.779	0.000*
Q14	2.80	1.16	3.25	1.13	3.13	1.14	7.914	0.000*
Pool	2.44		2.74		2.89		11.926	0.000*

Significant at 0.001.

Figure 21 indicates that rated officers value technology and its role more than nonrated officers, but that nonrated officers are much more inclined to see a significant role for space. The wide difference between the two groups on question 18 drives the difference overall on technology. This question, "In the Air Force of the 21st century, technical skills will be more important than operational expertise," may have been seen by the rated officers as a direct challenge to their preeminence within the service of the future, and by the nonrated officers as the door to their assumption of a more central role within the USAF hierarchy. Also, the mean rated officer response to question 9, on changing the name of the Air Force to the Air and Space Force, was the largest reported degree of disagreement seen. Rated officers are in the central position within USAF culture today, and they are acting to retain that position by pushing out any new core missions or fringe groups. Rating is still another source of division on technology and space.

Figure 21: Technology/Space by Rating

	Rated		Nonrated		ANOVA	
	Mean	SD	Mean	SD	F Score	Sig
Q10	2.20	1.09	2.34	1.17	3.993	0.046
Q18	2.13	0.92	2.57	1.01	49.541	0.000*
Q22	2.26	0.89	2.37	0.99	3.684	0.055
Pool	2.36		2.13		28.806	0.000*
Q9	1.81	1.14	2.47	1.46	57.350	0.000*
Q14	2.62	1.10	3.25	1.13	76.870	0.000*
Pool	2.22		2.86		106.261	0.000*

Significant at 0.001.

Figures 22, 23, and 24 report, respectively, the attitudes of operations officers, support officers, and scientific and engineering officers by rank within each specialty. There are some differences in attitude by rank within the operators, with senior officers more inclined

toward technology in one area while junior officers are more inclined toward technology in another. For space, however, senior rank among operators is clearly and significantly associated with a higher regard for the place of space within the USAF. For support officers there are no highly significant differences across rank regarding technology, while as with operators higher rank is significantly associated with a higher regard for the role of space. Note here that the pool mean on space is higher than 3.00, indicating agreement for a central position of space in the future USAF. Both the Lieutenant Colonels and Majors within scientific

Figure 22: Technology/Space by Specialization and Rank (Ops)

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.80	1.05	2.29	1.09	2.10	1.12	7.901	0.000*
Q18	2.34	0.96	2.14	0.90	2.20	0.99	0.726	0.484
Q22	1.98	0.72	2.06	0.79	2.40	0.93	9.990	0.000*
Pool	2.37		2.17		2.23		1.740	0.177
Q9	2.56	1.42	2.17	1.27	1.97	1.30	4.329	0.014
Q14	3.00	1.20	3.09	1.16	2.62	1.11	9.509	0.000*
Pool	2.78		2.63		2.30		8.663	0.000*

* Significant at 0.001.

Figure 23: Technology/Space by Specialization and Rank (Support)

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.41	1.33	2.43	1.19	2.14	1.06	2.800	0.062
Q18	2.47	1.13	2.53	0.98	2.58	1.02	0.194	0.823
Q22	2.15	1.10	2.10	0.86	2.45	0.99	5.724	0.004**
Pool	2.34		2.36		2.39		0.143	0.867
Q9	2.47	1.64	2.40	1.35	2.06	1.38	3.029	0.050
Q14	3.71	0.91	3.39	1.07	3.08	1.18	6.288	0.002**

	Pool	3.09	2.90	2.57	7.051	0.001*

  * Significant at 0.001. ** Significant at 0.005.

Figure 24: Technology/Space by Specialization and Rank (Science)

	O-5		O-4		O-3		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.85	1.09	2.51	1.16	2.45	1.23	0.934	0.395
Q18	2.70	1.03	2.57	0.91	2.86	0.96	1.602	0.205
Q22	2.95	0.83	2.43	0.89	2.71	1.16	2.418	0.092
Pool	2.83		2.50		2.67		1.802	0.168
Q9	2.70	1.69	2.78	1.50	2.52	1.46	0.554	0.576
Q14	3.55	1.19	3.30	1.17	2.90	1.05	3.860	0.023
Pool	3.13		3.04		2.71		2.329	0.101

and engineering officers also post a mean higher than 3.00 on the role of
space, but there are no significant differences within the scientific and
engineering community on either technology or space.

Figure 25: Technology/Space by Commissioning Source

	OTS		ROTC		USAFA		Other		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.37	1.14	2.25	1.16	2.28	1.11	2.45	1.23	0.594	0.667
Q18	2.49	0.96	2.43	1.04	2.27	0.96	2.50	0.69	1.658	0.157
Q22	2.25	0.87	2.34	0.98	2.35	0.94	2.60	1.10	0.950	0.434
Pool	2.37		2.37		2.30		2.52		0.808	0.489
Q9	2.38	1.33	2.19	1.44	2.13	1.30	2.30	1.66	1.292	0.271
Q14	3.15	1.10	3.06	1.19	2.77	1.14	3.30	1.17	4.270	0.002**
Pool	2.77		2.63		2.45		2.80		4.125	0.006

  ** Significant at 0.005.

Figure 26: Technology/Space by PME Completed

	AWC		ACSC		SOS		Other		None		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F Score	Sig
Q10	2.67		2.44		2.31		2.07		2.18	1.11	3.536	0.007
Q18	1.21		1.09		1.17		1.16		2.47	1.04	1.019	0.396
Q22	2.48		2.38		2.33		2.47		2.49	1.02	5.621	0.000*
Pool	0.99		0.97		0.96		0.99		2.38		1.514	0.196
	2.21		2.26		2.18		2.40					
	0.99		0.95		0.83		0.99					
	2.45		2.36		2.28		2.31					
Q9	2.59		2.57		2.18		2.40		2.10	1.39	4.108	0.003**
Q14	1.50		1.39		1.34		1.45		2.84	1.15	6.971	0.000*
Pool	3.38		3.34		3.05		3.20		2.47		8.075	0.000*
	1.20		1.04		1.17		1.26					
	2.99		2.96		2.62		2.80					

* Significant at 0.001. ** Significant at 0.005.

As Figure 25 indicates, there are few differences among the officers from different commissioning sources on technology and space. Only one question shows any statistical difference, and that difference is not highly significant. Source of commission is not a source of division here. Similarly, level of PME completion is not a source of division on attitudes toward the role of technology according to the data at Figure 26. Only one question elicited highly significant differences. However, for space the differences are more significant, with higher levels of PME completion being generally associated with more accepting attitudes toward space. Greater knowledge and exposure may lead to greater acceptance of and expectations for space.

Figure 27: Technology/Space by Gender

	Male		Female		ANOVA	
	Mean	SD	Mean	SD	F Score	Sig
Q10	2.30	1.15	2.17	1.05	1.274	0.259
Q18	2.37	1.00	2.73	0.97	13.760	0.000*

	Mean	SD	Mean	SD	F Score	Sig
Q22	2.33	0.96	2.34	0.91	0.017	0.896
Pool	2.33		2.41		1.475	0.225
Q9	2.20	1.39	2.37	1.36	1.396	0.238
Q14	2.96	1.17	3.43	1.03	18.571	0.000*
Pool	2.59		2.90		9.615	0.002**

  * Significant at 0.001. ** Significant at 0.005.

Figure 28: Technology/Space by Joint Experience

	Joint		No Joint		ANOVA	
	Mean	SD	Mean	SD	F Score	Sig
Q10	2.34	1.17	2.28	1.14	0.320	0.572
Q18	2.43	1.02	2.40	1.00	0.266	0.606
Q22	2.08	0.90	2.35	0.95	5.127	0.024
Pool	2.28		2.35		0.716	0.398
Q9	2.50	1.43	2.19	1.38	3.881	0.049
Q14	3.33	1.11	2.99	1.16	6.995	0.008
Pool	2.92		2.59		8.465	0.004**

  ** Significant at 0.005.

As Figure 27 indicates, female officers would appear to have a higher regard for the roles of both technology and space than do male officers. These differences, however, for the most part are not statistically highly significant. Finally, as shown in Figure 28, while joint experience would appear to lessen one's regard for technology and heighten one's appreciation for the role of space within the USAF, these differences are more apparent than real, at least in a statistical sense. Gender and joint experience are not major sources of division on either technology or space.

Thus, on technology and space the major sources of division within today's USAF are found in terms of rank, rating, and specialty, with lesser differences across levels of PME completion. The most significant findings here are that rated officers take a much dimmer view of the role of space within the USAF than do nonrated officers,

perhaps because they are trying to protect their favored position at the top and at the center of the Air Force from a perceived challenger. While rated officers took the dimmest view of space, senior support officers and scientific and engineering officers rated it as most significant. Also, senior USAF officials should note that the standard deviations for question 9, "The Air Force should be renamed the Air and Space Force," were the highest of any question in the survey, indicating the widest range of disagreement within all groups measured on this question. While *Global Engagement* states "We are now transitioning from an *air* force into an *air and space* force on an evolutionary path to a *space and air* force,"[53] USAF officers are, particularly within the rated community, not yet ready to make that transition. Ironically, if the USAF does not become more accepting and supportive of a key space role within the existing force, it may find itself in the position of the U.S. Army relative to the Army Air Corps and encourage the development of a separate space force as the only viable alternative.

     The USAF in 1997. In summary for the survey then, the expectations were, first, that the 1997 USAF would be a fractionated body, one lacking a common vision that had thus devolved into functional, technical, and occupational communities with little integrating these groups. Second, this Air Force should be largely occupational in its orientation, with the high levels of technology present in most USAF missions combining with high levels of education among the USAF officers to further this occupational orientation. The junior officers (as opposed to more senior), the support officers (as opposed to operators), and, among the junior operators, the rated officers (as opposed to nonrated junior operators) were expected to be the most occupational in orientation. This force would be a complex mix of communities with no integrating vision, no glue, to hold or bring them

together into a cohesive entity.

This study finds that the picture, while consistent with many of those expectations, is not quite as "bad" as one might think based on previous studies. Certainly the USAF today is a highly technical force with a complex mix of specialties across a wide range of core and secondary missions. Certainly the USAF today is a highly educated force—much more so than the other services. And just as certainly there are differences and fracture lines across this large and complex Air Force, some of them apparently pronounced based on everyday observation. But this study indicates that there is a common foundation, a basic infrastructure underlying gaps which may not be as wide as some might think, upon which to build a more cohesive air and space force for the future.

This study of 1030 line USAF officers in the late summer of 1997, Captains at SOS, Majors at ACSC, and Lieutenant Colonels at AWC, represents a cross section of the middle ranks, specialties, ratings, sources of commission, levels of PME completion, genders, and joint experience found across the entire USAF. These respondents are representative of USAF culture and cohesion today. The group was surveyed on institutional/occupational orientation (I/O), mission/priority/allegiance rankings, and attitudes toward technology and space to determine sources and depths of differences across the USAF.

On I/O orientation, which is a continuum of attitudes between these two poles, not an absolute choice of only two positions, significant differences were seen based on rank, occupation, rating, PME completion, and joint experience. The higher ranking, more service educated, and joint experienced officers were found to be relatively more institutional in their orientations, along with the support officers and

scientific and engineering community, and the nonrated officers. The relatively less institutional orientation of rated officers and core elite operators is certainly a concern for cohesion building. But most noteworthy here was that in only one subcategory and for a single question was the mean response recorded as over the centerline of the continuum and into the occupational side. While earlier reports stated that this group or that group was more or less occupational in its orientation, this study chooses to report relative degrees of institutional orientation. That in itself should provide a bit more optimism as to the possibility of at least bridging the I/O gaps within the USAF officer corps. Only one question (number 5) on non-mission related duties, the omnipresent military "Mickey Mouse," brought a series of mean responses over 3.00, and only the most junior operational officers (rated officers and space and missile officers) registered a pool mean score over the 2.50 midpoint (theirs a 2.51), or an "occupational" answer.

On the relative ranking of alternative missions, priorities, and allegiances, the survey found higher degrees of agreement across the USAF. Few differences were seen on mission choices, with "team" efforts being elevated over operational combat mission as the highest mission by more senior scientific and engineering officers. And no differences in rankings were noted for allegiances. Only priority showed some differences, with several subgroups ranking operational mission over people as number one and more senior officers generally reversing those two priorities.

Finally, the responses on technology and space showed significant differences, and these should be targeted to bridge the real gaps here. Some differences were seen on technology, with more senior officers, operators and rated officers, and those with higher levels of PME completion generally looking more positively on the role

technology plays in the USAF. But the key differences here were on space. Senior officers, support and scientific and engineering officers, nonrated officers and those with more PME and a joint assignment, as well as female officers all demonstrated a higher regard for the role of space. Most noteworthy, again, was the rated officer response, which was very low on space, standing out as a true gap from the rest of the USAF on this issue. Further, the range and degree of difference was greatest on this issue of the Air and Space Force. This is the fracture line that truly stands out in this study, and it is significant to the future of space within the USAF.

So fractionalization was found on the basis of rank, occupation, and rating with lesser degrees of difference found for level of PME completion and joint experience, and for rank within the occupational categories of operations and support officers. Few differences were found for source of commission or gender, or within the scientific and engineering community, across the questions surveyed here. And again, for the most part the differences were perhaps not as striking as were some of the areas of similarity. Operational and occupational focus will lead to some degree of difference in reaction to various areas surrounding USAF culture and mission, but the gaps appear here to be bridgeable. The USAF line officer corps appears to provide a basic infrastructure upon which cohesion can be built.

BUILDING A COHESIVE FORCE

Building or fostering cohesion within a complex organization is a difficult task, but it is one that has been and can be successfully accomplished. What must be remembered is that culture change and cohesion are products of senior leadership acting in concert with leaders

reaching down into the organization—it is an internal, active, top-down process. It must begin with the clear definition of a single, unifying mission or vision, one that is attuned to the task structure of the organization and which all key elite segments of the organization can embrace. Then that vision must be actively disseminated across the diverse subcultures and fractionated specialties before it can be embraced and begin to take effect.

Completing a USAF organizational transformation requires completing its cultural transformation, remaking the Air Force into its 21st century Air and Space Force vision.[54] First, this process requires a careful alignment of the USAF conception of its task environment with the perception of that environment held within the general, political environment (the national security bureaucracy, especially the Department of Defense the Joint Staff). This is the clear vision required from senior leadership at the top of the corps elite. The USAF *Global Engagement* vision statement and its core competencies, especially as these are consistent with the *Joint Vision 2010* process (*Joint Vision 2010*, the *Concept for Future Joint Operations*, and the *Joint Vision Implementation Master Plan* for the moment), provides a solid start to building this identity.[55]

Second, the USAF strategy and structure must be realigned to achieve the critical operational tasks, roles, missions, and functions at the heart of the vision—the expeditionary, decisive application of air and space power at the halt phase of operational-level conflict. This "new way of war" entails the application of new technologies and new operational concepts, and it requires active adaptation of today's Air Force. This is the place for unified, active leadership reaching down to reshape the service through clear and cohesive guidance. Air Force Doctrine Document (AFDD)-1, the "Little Red Book," and its successor

AFDD-2, and the evolving expeditionary halt phase air dominance strategy all are key parts of this strategic effort. The results of the survey analysis for this study indicate that the role of space within the USAF must be a central feature of this revised strategy and structure to retain space within the organization. Otherwise, space may be forced to seek an independent identity in order to survive and prosper as a distinct mission element.

Third, the changed culture, realigned and reinforced elites, and revised priorities must be socialized across the organization. Key here is creating a cohesive, encompassing team focus around which the diverse subcultures and specialties can (and will want to) coalesce. Rewards and incentives, promotions, and training must all be brought into alignment with this team concept to provide the "glue" to hold the reshaped service together until it fuses into a common whole. The new team culture must be socialized from the beginning of one's entry into the closed career system, either via precommissioning education, initial specialty training, or a common USAF orientation. This culture and vision must then be reinforced across one's career, not just in formal PME programs, but also via active mentoring by leadership at every level.

The test Air and Space Basic Course (ASBC) and the continuum PME process being studied at Air University may be steps in this direction, with the joint education cradle-to-grave career progression suggested in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01 being a viable model for the USAF program. However, the informal dimension will be key to the broadest success of this socialization effort, and it rests in the active mentoring of their juniors by USAF leaders, a harder process to institutionalize and standardize. As cited earlier, the ASBC curriculum support surveys that

Air University conducted in 1996 indicated that the focus for junior officer socialization should be on core values, ethics, teamwork, and Air Force missions. Secondary emphasis should be on Air Force history and doctrine, or airmindedness.[56] The Air Force must note that shared values are certainly a foundation upon which to begin to build cohesion, but that one must also define and promulgate a clear and unifying vision, a sense of shared mission in which each member can see a direct and important stake, before a unified service can arise. The final result here must be changed output in terms of the performance and cohesion of the USAF team within and across the 21st century battlespace, and simple or singular attempts at solution may not be enough.

        As the USAF completes this transition, it must also remember that the perceived coherence of the other U.S. military services must not be taken as a direct "fix" to unique Air Force issues and problems. The Air Force is simply not the Army, nor is it the Navy, and it is certainly not the Marine Corps. Their programs will not automatically transfer unchanged to the USAF. Each must be analyzed, evaluated, and adapted for Air Force applications. Dr. Arnold Kanter's research pointed to the differences among service cultures and cohesion.[57]

        He found the Army to be the most closely integrated service. This could be attributed to interbranch mobility across one's career, with many officers serving one or more tours in different branches of the service. Kanter also saw multi-branch bases as contributing to cross-branch understanding and communication, and ultimately to cohesion. In fact, the Army operates as an interdependent, combined arms team, with each specialty area interacting with and depending directly on others for support. The operational Army is a team—it lives as that team on its bases, it deploys to the field to live even more closely together in that team, and it lives or dies in combat based on direct

linkages and mutual support between the members of that team. The National Training Center experience of the 1990s reinforces this team concept. The Army is built for cohesion.

Kanter does not address the Marine Corps, but it has all of the cohesive elements found with the Army plus the additional advantages of a narrow mission set and a small size. The Marines are organized into an organic whole, the Marine Air-Ground Task Force. Marines live in that integrated organization, they deploy at sea for extended periods in that structure, and they face both their operational and political environments as a singular team. They are focused and challenged as a unit, and they see themselves in that light—the Marines are a cohesive warrior unity. They have much in common with Wilson's model cohesive unit, the U.S. Forest Service, which is small, remotely stationed, field oriented, and institutionally cohesive.[58]

Kanter credits the Navy with being the second most cohesive of the three largest services. Navy skills are more distinct and diverse than the Army, but the naval task force is also an interdependent operational organization. This operational interdependence provides a binding force across weapons systems and specialties, and this cohesion is reinforced through multi-specialty interaction in the ports and wardrooms of the fleet. As with the Army, operational deployments and combat interdependencies mold the force together into a fairly cohesive whole.

By contrast, Kanter sees the USAF as the least cohesive of the services. He attributes its fragmentation to the specialized nature of its technologies, the specialization of its wing structure, and its relative isolation of one specialized unit from the others. The basis of the problem here is technology. USAF technologies are diverse and specialized, and both efficiencies and effectiveness come from organizing around those unique technical assets. The operational Air

Force mixes assets within operations, but they live apart and work in isolation until they join up enroute to the operational target. And direct support technologies which are integrated into the actual operation may physically be even continents away at the time they are "interoperating" with a force. Further, the USAF mission mixes several operational foci, from surface warfare support, through theater and global airlift, to strategic operations, and into space. There is much less "glue," less single-mission simplicity, and less combined physical contact than is seen with the other services. The Air Force cannot be the Marines, and Marine answers may not even begin to address Air Force questions.

Perhaps the Air Force should look outside the military into other complex government agencies and civilian organizations for models as well. High technology enterprises in the non-military sector might offer relevant inputs for USAF cohesion issues. One place to look is certainly to the National Aeronautics and Space Administration (NASA). It is not the USAF, either, but it can offer at least as much relevant experience as can the other services. NASA also faced a period of transition leading up to the Challenger disaster, and it is now facing an institutional renewal at least as fundamental as that facing the USAF. Professor Howard McCurdy outlines issues of culture and cohesion in the confederation of cultures known as NASA, finding that the integrative, cohesive matrix culture which characterized the Apollo era gave way to bureaucratic entropy and disorder leading up to Challenger. The political environment decreased its support for NASA, the bureaucratic pressures became paramount, and "conservers" pursuing a survival mentality replaced "innovators" at the core of the organization.[59] Today, in line with Administrator Dan Goldin's emphasis on "better, faster, cheaper," NASA is attempting to reinvigorate its high-tech, multiple subculture matrix team around new

missions and goals, and the USAF should take note of those efforts.

Regardless of the models examined, the Air Force must find its own answers within its own set of cultures and pressures: it must define, build, and sustain its own team within and against its own mission and vision. The officer corps is the key to that effort. Military officers lead the various units at all levels, and through that leadership set the example and the climate of the primary groups with which USAF members identify. And those same officers provide the linking mechanism, the glue, that binds those individual units into a force, both across the functions and up and down the Air Force.[60] The officers set, disseminate, and perpetuate the culture, and they must all become involved in reinventing the Air Force team. The Air Force officer corps must share essential values, define the service core mission(s) within the operational and political environments, create a unifying vision, and undertake strategic planning and action to promulgate that vision.[61]

A start should come from clearly defining the Air Force team, one that includes both air and space power functions within the operational context of the 21st century battlespace. For example, *Global Engagement* projects that "*In the future, any military or civilian member who is experienced in the employment and doctrine of air and space power will be considered an operator.*"[62] Air Force leadership can build on that expanded operational concept to define the future, inclusive USAF team. However, the team must be real—it must be backed tangibly through policy and incentives (promotion, status) from the top down. The team concept and its underlying vision must be disseminated at all levels, not just through formal means but through active, continuous involvement of all commanders. It must be a formal and informal, cradle-to-grave continuum of Air Force *corps* concepts, not just *core* concepts. The team must be built, reinforced, and employed—

as a team, not just its parts—and the USAF incentive system of recognition and advancement must be aligned with that team concept. High-tech, complex, matrix teams can be productive, loyal, unified, and effective—the USAF can and should expect or accept no less.

CLOSING

True, the Air Force has a cohesion problem. But the Air Force also has a common infrastructure upon which to begin to build its future, inclusive, more cohesive team. It needs to define that team, consolidate its missions around that team, and actively promulgate, reward, and support its vision into the 21st century air and space future. The effort must be extensive and pervasive, incorporating formal education and training but focusing also on day-to-day, unit-level efforts to live the team concept. It must come from the top, but it must reach down to and through commanders at all levels in a continuing, cradle-to-grave effort across each airman's career. The fracture lines are real, and the technological and mission diversity pressures tend to pull the Air Force apart, so it must put real and focused effort into pulling together, not as a single entity, but as a team coming into harmony around shared missions and common goals. A team effort is possible, even if a single unified entity is not, and the effort must be made to bring that team onto the field.

APPENDIX 1: SURVEY INSTRUMENT

This survey supports a study being conducted for the USAF Institute for National Security Studies (INSS) under air staff sponsorship. It has been approved by the Air Force Personnel Center Survey Branch. Do **NOT** indicate your name on the survey—only aggregated results will be used. Copies of the completed study will be available from USAF INSS, USAF Academy, CO 80840 after 1 October 1997. Circle your responses on this survey form.

1. Current Rank:
   a. O-1 or O-2
   b. O-3
   c. O-4
   d. O-5
   e. O-6

2. Source of Commission:
   a. OCS
   b. OTS
   c. ROTC
   d. USAFA
   e. Other: _____

3. Primary Career Field:
   a. 13xx missiles/space/weapons
   b. 14xx intelligence
   c. 15xx weather
   d. 21xx logistics

e. 31xx or 71xx security

f. 32xxx base engineering

g. 33xxx computers/comm

h. 34xx-38xx services/support

i. 61xxx scientist

j. 62xxx engineering

k. 63xx-65xx acquisition mgt

l. 11xx pilot

m. 12xx navigator

For Pilots and Navigators, Mission Type:

a. Airlift, Strategic

b. Airlift, Tactical

c. Bomber

d. Fighter, air-to-air

e. Fighter, attack/CAS

f. Fighter, bomber/AI

g. Fighter, recce

h. Helicopter

i. Special Operations

j. Strategic recce/C2

k. Tanker

l. Trainer

4. Most Recent Assignment:

a. 13xx missiles/space/weapons

b. 14xx intelligence

c. 15xx weather

d. 21xx logistics

e. 31xx or 71xx security

f. 32xxx base engineering

g. 33xxx computers/comm

h. 34xx-38xx services/support

i. 61xxx scientist

j. 62xxx engineering

k. 63xx-65xx acquisition mgt

l. 11xx pilot

m. 12xx navigator

5. PME: (highest level completed)

   a. None

   b. SOS

   c. ACSC

   d. AWC

   e. Other Service/Joint

6. Have you ever served in a joint assignment?

   a. Yes

   b. No

7. Your Gender?

   a. Male

   b. Female

**Please indicate your responses according to the following scale:
0—No Opinion; 1—Strongly Disagree; 2—Disagree; 3—Neither
Agree nor Disagree; 4—Agree; 5—Strongly Agree**

1. The mission of the Air Force is to fly and fight.

       0   1   2   3   4   5

2. If I left the Air Force tomorrow, I think it would be very difficult to get a job in private industry with pay, benefits, duties, and responsibilities comparable to those of my present job.

       0   1   2   3   4   5

3. Air Force members should take more interest in mission accomplishment and less interest in their personal concerns.

       0   1   2   3   4   5

4. The mission of the Air Force is to advance technology and engineering.

       0   1   2   3   4   5

5. The Air Force requires me to participate in too many activities that are not related to my job.

       0   1   2   3   4   5

6. I wish that more Air Force members had a genuine concern for national security.

       0   1   2   3   4   5

Please indicate your responses according to the following scale:
0—No Opinion; 1—Strongly Disagree; 2—Disagree; 3—Neither Agree nor Disagree; 4—Agree; 5—Strongly Agree

7. The mission of the Air Force is to support the team which acts to further the national interest.

| 0 | 1 | 2 | 3 | 4 | 5 |

8. An individual can get more of an even break in civilian life than in the Air Force.

| 0 | 1 | 2 | 3 | 4 | 5 |

9. The Air Force should be renamed the Air and Space Force.

| 0 | 1 | 2 | 3 | 4 | 5 |

10. In the post-Cold War world, the Air Force should cut people, bases, and scale back on missions in order to develop and acquire new systems and technologies.

| 0 | 1 | 2 | 3 | 4 | 5 |

11. The number one Air Force priority should be taking care of Air Force people.

| 0 | 1 | 2 | 3 | 4 | 5 |

12. Differences in rank should not be important after duty hours.

| 0 | 1 | 2 | 3 | 4 | 5 |

Please indicate your responses according to the following scale:
0—No Opinion; 1—Strongly Disagree; 2—Disagree; 3—Neither
Agree nor Disagree; 4—Agree; 5—Strongly Agree

13. The number one Air Force priority should be the advancement of air and space technologies.

      0   1   2   3   4   5

14. In the Air Force of the 21st century, space and cyberspace will be more important than atmospheric missions.

      0   1   2   3   4   5

15. No one should be compelled to accept an assignment he or she does not want.

      0   1   2   3   4   5

16. The number one Air Force priority should be fighting and winning aerial combat.

      0   1   2   3   4   5

17. What a member of the Air Force does in his or her off-duty hours is none of the military's business.

      0   1   2   3   4   5

18. In the Air Force of the 21st century, technical skills will be more important than operational expertise.

      0   1   2   3   4   5

Please indicate your responses according to the following scale:
0—No Opinion; 1—Strongly Disagree; 2—Disagree; 3—Neither
Agree nor Disagree; 4—Agree; 5—Strongly Agree

19. Within the Air Force, I owe the most allegiance to my particular career field.

       0   1   2   3   4   5

20. Compensation should be based primarily on one's technical skill level and not on rank and seniority.

       0   1   2   3   4   5

21. Within the Air Force, I owe the most allegiance to the core Air Force combat mission.

       0   1   2   3   4   5

22. Promotion and assignment should be based primarily on technical expertise rather than operational experience.

       0   1   2   3   4   5

23. Within the Air Force, I owe the most allegiance to personal interests and concerns.

       0   1   2   3   4   5

24. I normally think of myself as a specialist working for the Air Force rather than as an Air Force officer.

       0   1   2   3   4   5

Please indicate your responses according to the following scale:

0—No Opinion; 1—Strongly Disagree; 2—Disagree; 3—Neither Agree nor Disagree; 4—Agree; 5—Strongly Agree

25. In today's technical Air Force, we really don't need so much military ritual and tradition as in times past.

          0   1   2   3   4   5

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